

REMARKS

Claims 1, 2, 4-9, 21, 22, 25-38, and 40-55 are pending in the application. Claims 5 and 46 are canceled by this amendment without prejudice. No claims are allowed.

Claims 1, 25, and 27 are amended to change the subject of the Markush group from "tail functional group" to "tail."

Claims 52-55 have been amended to change "ligand shell" to "particles."

Claims 53 and 55 have been amended to recite that the particles are linked to each other and to the substrate by coupling agents. Support for this amendment is found at page 18, lines 7-19.

No new matter has been added.

Claim Interpretation

The Examiner has interpreted the language in the claims as excluding coupling agents from the ligand shell molecules. Regardless of this interpretation, the claims do not exclude coupling agents as other than ligand shell molecules. The coupling agents may be bound to the core in addition to the ligand shell molecules. Claims 52-55 have been clarified to recite that the particles have or do not have coupling agents. Thus, the coupling agents are not defined as part of the ligand shell, though they may be intermingled with the ligand shell molecules.

Claim Objections

Claims 5 and 46 have been objected to. The claims have been canceled without prejudice.

Claim Rejections – 35 U.S.C. § 112

Claims 1, 2, 4-9, 25-32, 37, 38, 40-48, and 50-55 have been rejected under 35 U.S.C. § 112, second paragraph as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Regarding claims 1, 25, and 27, the Examiner stated that it is the tail portion of the ligand molecule that is properly claimed as the Markush group, rather than only a portion of the tail. The claims have been amended accordingly.

Claims 1, 2, 4-9, 21, 22, 25-38, and 40-51 have been rejected under 35 U.S.C. § 112, second paragraph as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner stated that the scope of the tail is unclear, because it could include a carboxylate group (as recited in claims 37, 40, and 50), which could bond to an aluminum substrate, while the claims also recite that the tail has a structure and composition designed to provide additional stabilization of metal clusters against irreversible agglomeration.

The independent claims do not recite specific metals for the core or materials for the substrate. Any combination of core, substrate, and tail that meets the recited limitations is within the scope of the claims. Thus, if an aluminum substrate were used, than carboxylate may be excluded from the tail. But carboxylate may be appropriate for other types of substrates. It is known in the art which functional groups will bond to which metals, so there is no indefiniteness.

Claims 1, 2, 4-9, 21, 22, 25-27, 29-38, and 40-55 have been rejected under 35 U.S.C. § 112, first paragraph as allegedly failing to comply with the enablement requirement. The Examiner stated that, according to the specification, the solution casting and slow evaporation method does not produce an acceptable film, but that the spraying method of claim 28 does. The Examiner also stated that the layer-by-layer method was excluded from the scope of the claims.

Firstly, the layer-by-layer method and product made thereby are not excluded from the scope of the independent claims. As explained above, the claims cover particles both with and without coupling agents.

As to claims 1, 2, 4-9, 21, 22, 25, 26, 33-38, and 40-51, these are product claims. It appears that the Examiner would withdraw the rejection if these claims were limited to the spraying process. This would make them product-by-process claims. However, a product-by-process claim is not limited to products made by the recited process. Reciting the spraying process in these claims would not actually change the scope of the claim.

“As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, the enablement requirement of 35 U.S.C.112 is satisfied.” MPEP 2164.01(b). Here, the specification discloses at least two processes. The spraying process is suitable for couple agent-free particles. The layer-by-layer method is suitable when a coupling agent is used. The fact

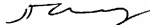
that other methods exist that either fail to make the claimed product or that make the claimed product less than optimally does not bear on whether the specification teaches at least one method that does produce the claimed product. ("Failure to disclose other methods ... does not render a claim invalid." MPEP 2164.01(b)) The fact that other methods may be disclosed does not change the enablement analysis of product claims.

As to claims 27 and 29-32, these are method claims. As stated above, the independent claim covers particles both with and without coupling agents. The specification discloses the spraying method and the layer-by-layer method as possible methods of "depositing on a substrate ... a thin film of a multiplicity of particles in a three-dimensional close-packed orientation," as recited in claim 27. The specification also discloses a solution casting method. Page 17, lines 9-11. The Examiner stated that this part of the specification teaches that this method does not produce an acceptable film. However, the specification actually says that the method "does not produce a thin film with reproducibility and acceptable uniformity." It does however, produce a film that is within the scope of "a thin film of a multiplicity of particles in a three-dimensional close-packed orientation," as recited in the claim. Even if such a film were unacceptable, "the presence of inoperative embodiments within the scope of a claim does not necessarily render a claim nonenabled." MPEP 2164.08(b).

In view of the foregoing, it is submitted that the application is now in condition for allowance.

In the event that a fee is required, please charge the fee to Deposit Account No. 50-0281, and in the event that there is a credit due, please credit Deposit Account No. 50-0281.

Respectfully submitted,



Joseph T. Grunkemeyer
Reg. No. 46,746
Phone No. 202-404-1556
Office of the Associate Counsel
(Patents), Code 1008.2
Naval Research Laboratory
4555 Overlook Ave, SW
Washington, DC 20375-5325